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THREE STUDIES IN EDUCATION:

THE SPELLING QUESTION

COMPOSITION FOR ELEMENTARY SCHOOLS

VALUE OF THE MOTOR ACTIVITIES IN EDUCATION

1737

BY

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The Spelling Question.

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DURING the past three years four separate investigations upon the spelling problem have been made in the School of Pedagogy, New York university. Two of these investigations were made by myself and the other two were carried forward under my immediate direction. The object of these investigations was to see whether some new knowledge might not be gained that would render more specific guidance in the teaching of spelling. Other investigators have been working on this problem, but no reports of those investigations have come under the writer's notice except that of Miss Adelaide Wyckoff on "Constitutional Bad Spellers" in the *Pedagogical Seminary* for December, 1893, and that made in Sioux City, the returns of which were published in the *Iowa Normal Monthly* and also in *The School Journal* for May 16, '96. Miss Wyckoff made tests upon an extremely small number of spellers, who were mature pupils with some power of introspection. Her study is valuable for its suggestiveness.

The investigation made at Sioux City, starting out with the proposition that spelling exercises as usually conducted appeal to three kinds of memory, namely, that of form thru the eye, that of sound thru the ear, that of muscular resistance thru muscular effort in writing, sought to determine which of these three kinds

of memory is most potent in learning to spell, so that in teaching spelling the greater measure of success might be attained by making the appeal chiefly to that kind of memory.

In the Sioux City investigation, seven hundred and forty-three pupils were tested with meaningless words of five and ten letters, as, grynaphisk, halep-mirus, so using these words as to appeal to the eye, to the ear, and to the eye and ear together.

Interpretation of Investigations.

In the four investigations already referred to, between five and six thousand children have been tested, and altho for the sake of greater accuracy and the further verification of the data collected, full reports of those investigations will not be made for some time to come, yet some of the conclusions may be set forth for guidance in teaching spelling. In two of those studies the interpretation of the returns is so different from the conclusions reached in the Sioux City investigation as to warrant, in the interest of pedagogy, not only an examination of those conclusions, but to question in some degree the fundamental proposition underlying that investigation.

The auditory tests in the Sioux City investigation were made by naming each letter of the meaningless combinations spoken of, and then directing pupils to write down the letters of the word in the order given.

The visual tests were made by exposing each word, printed in large letters upon a card. Upon removal of the card, the word printed thereon was written down by the pupils.

For the audo-visual test, the pupils named in concert each letter of the word from the printed card held before them, after which the command was given to write.

In the tabulation of the returns the averages resulting

therefrom were as follows: for the auditory test 44.8—% for the visual test 66.2% and for the audo-visual test 73.7%. It will be noticed that the lowest percentage of the letters recalled was by the auditory test; that with the visual test 21.4% more letters were recalled; and that when the auditory test and the visual were combined, 7.6% more letters were recalled than by the visual alone, and 29% more than by the auditory test.

The conclusion drawn from these percentages was stated in the following words: "This seemed to point to the conclusion that to the average pupil the appeal in spelling should be made chiefly to the eye."

Do not the percentages resulting from the three kinds of test, I wish to inquire, seem rather to indicate that the appeal should be made to that combination of powers which gives the highest percentage of correct results, viz., the audo-visual? If an appeal to the eye and the ear together gives 7.6 per cent. better returns, than an appeal to the eye alone, how can it be reasoned that the appeal should be made chiefly to the eye?

But an important factor is overlooked if the audo-visual test which was given to the seven hundred and forty-three pupils in Sioux City is regarded merely as a test of eye and ear combined. That important factor is the motor apparatus which operates in speech.

Appeal to Several Senses.

Learning to spell is largely a matter of association, and, therefore, in teaching spelling the more sense avenues from which elements may be complicated, the stronger are the resulting associations formed and the more easily will those associations rise under call, for the simple reason that there are more clues for their revival. The greater the number of complicated elements, the easier will the association rise in consciousness under recall and the

easier will it be to hold it there for reproduction. The greater part of the difference of 7.6% between the visual and the audo-visual tests I should rather be inclined to regard as representing a gain contributed by the motor apparatus of speech which was employed in the audo-visual test. In this audo-visual test, or to name the test correctly—the visual-auditory-motor test—the eye, the ear, and the motor speech appa.atus are working almost simultaneously and in harmony. Can there be any question that under such conditions the proper association of letters in words is not stronger than by the use of only one or two of the senses involved ?

In one of the four investigations already referred to, over 2,000 children were tested with nonsense combinations of from three to ten letters in length. In the first part of the investigation 140 visual presentations of these were made. From thirty to forty pupils were tested at a time, and the tests were so divided as to make no fatiguing demands upon the pupils. Each child wrote down what he could recall of the 140 printed cards held up before him for a given length of time. The pupils were requested not to move their lips when looking at the combinations; and altho we impressed upon them as strongly as we could that they must not use their lips, we found that tho they started out with very commendable effort not to do this, they would soon lapse into the use of their lips. When another strong appeal not to use the lips was made, many cases came under our observation of children who, while inhibiting the use of their lips, were moving their hands or a finger as if telling off the letters silently. After repeated observations by those who assisted in making the tests, the conclusion was reached that at least ninety per cent. of all the children tested lapsed into aiding themselves by using their lips—unless stror gly ap-

pealed to when each combination was held up. This lapsing, moreover, occurred in schools where the spelling had been taught almost wholly by appealing to the eye. So strong a tendency as this to use a motor accompaniment is significant in suggesting that the motor speech apparatus be turned to use in learning to spell, not that it be repressed, thus making, I believe, additional difficulties not only for the pupil but also for the teacher.

Oral Spelling.

Spelling is a very arbitrary matter, and yields to but slight extent to the logical and causal helps which are employed in teaching other subjects. Motor elements are important elements in association, and with so arbitrary a subject as English spelling every aid in strengthening the association should be employed. From the experiments made and the verification of the conclusions in actual school application, I am convinced that the motor apparatus used in speech should be employed to a large extent in teaching spelling. All preparation of words to be written should be oral preparation, and very careful preparation at that, particularly in the second, third, fourth, fifth, and sixth school years. Writing should be the final test, but only after careful preparation orally. And in that preparation the letters should be grouped into syllables and the syllables pronounced according to the method of a generation or two ago. The poor results now so common in spelling would thereby be greatly bettered. In the end, time would be gained, and the pupil rendered better able to help himself. The method of leading the pupil to grasp the word as a whole thru the eye has made confused spellers of large numbers of children. With some, however, it has produced excellent results.

The tests show that in the appeal to the eye many children seized the first and the last letters of the

word, but left out some of the middle letters or mixed these.

It would seem, then, that the naming of the three, four, or five letters, as the case may be, that constitute a syllable, and then attaching a name to these grouped letters, thus binding them into a small unity, would aid the pupil to a remarkable degree. The putting of these small unities together into the larger word unity, gives the pupil a synthetic power to this end and makes his progress more rapid and easy on the long road he must traverse in learning to spell.

But this is a return to an old method, it will be remarked. It is taking what was good from an old method and using it as a part of a broader and better method than is now generally employed in our schools. Written spelling is not to be neglected, but it is to come last, after careful oral preparation.

The Method of Written Spelling Questioned.

For the last two decades or more this method has been almost wholly repudiated as an aid in learning to spell. The false notion that the eye is the avenue to which to appeal in teaching spelling began to obtain at that time a very firm hold upon the minds of teachers. Institute lecturers made strong efforts to inculcate this idea and their efforts met with large success. As much greater power was imputed to the eye in this regard, than it actually has, the time devoted to learning to spell naturally became shortened, and the spelling lesson passed from the place of prominence in the program of work to a place of subordinate importance, and quite generally the spelling lesson was merely the writing of words selected from the reading lessons, with repeated drill in writing upon words incorrectly spelled.

The larger knowledge which has resulted from the great

development of psychological study of recent years leads us to see that the teachers of a generation and a half ago were not so wholly wrong after all in their teaching of spelling. They were right as far as they went, but they did not go far enough. Those who repudiated the old method and made the appeal almost wholly to the eye, were right in holding that for most pupils the eye is a stronger sense avenue of appeal than the ear when only these two are considered. But the motor speech apparatus was not regarded as a factor in the matter.

It is true that in testing any hundred pupils according to the methods which are supposed to determine whether they are eye-minded or ear-minded, we shall find a large percentage of the hundred eye-minded and only a small percentage markedly ear-minded. But it will also be found that a very large percentage will give good returns to the tests for determining eye-mindedness and also to the tests for determining ear-mindedness, with the returns usually in favor of the test for eye-mindedness. In every grade of pupils, it must be remembered, such differences will be found. The method in teaching spelling should therefore be broad enough to appeal fully to these differing aptitudes in different pupils and also broad enough to appeal to those pupils in which these aptitudes are more nearly balanced. The method already suggested is broad enough to make this varied appeal.

In the article giving account of the Sioux City investigation the opinion was also advanced that accurate observation should have some bearing upon correct spelling. Tests were also made in the Sioux City investigation upon 149 good spellers and 149 poor spellers to see which were the best observers when ten different articles were exposed at the same time to each pupil and the pupils afterward asked to write the names of the objects. Because it was

found that the good spellers were the best observers, it cannot be inferred from such a test that poor spelling "is largely due to inability to picture the word correctly and promptly in the mind's eye." Good spellers are good observers as a rule because they possess better all-round mental capacity than poor spellers. Our tests showed us that the poor spellers in their power to learn to spell new words were from a year to a year and a half behind the good spellers, taking, of course, children of the same age. Training the power of observation thru nature study has been recommended as aiding the pupil in learning to spell. Such a recommendation has no warrantable foundation, and its employment would prove of little if any specific value in aiding the pupil to spell; nor will efforts made to develop the so-called eye-mindedness avail much.

Spelling is largely a matter of association, and the eye, the ear, and the motor must be appealed to so as to produce the strongest complication of sensory elements. Care then in the right kind of oral preparation, with considerable oral test before writing, training pupils to build up words by using the small unities into which words can be divided, is a method of teaching spelling productive of the best all-round results.

The Essentials of English Composition for Elementary Schools.

UNDER the essentials of English composition for elementary schools I shall comprehend every means that contributes to give a pupil the fullest and freest command of English it is possible to give in the elementary school. More can be done, I am confident, than has yet been generally attained in this direction. The error of the past has been the loss of time and the waste of effort in teaching English from its formal phase, and largely as an end in itself.

Correct Spelling.

The first essential of English composition to be secured in the elementry school is correct spelling. There is abundant evidence on every hand to show that the method generally pursued to-day in teaching spelling is a method which does not give satisfactory results. Some spelling can, of course, be taught incidentally, but in so difficult and arbitrary a matter as English spelling a definite time must be set apart for it in the school-program, when spelling shall be pursued as a regular exercise.

The first point to be considered in this connection is the gradation of words. The plan of leaving to the judgment of the teacher the selection of words for her grade is altogether too haphazard a one. This plan may, to

some extent, be permitted, but it ought not to be used exclusively, for under such conditions there is very little guidance as to the vocabulary, that is, its extent, or what range of words shall be given in the various grades. With such a plan, it is difficult to know what the omissions are. I believe, therefore, in a carefully-selected list of words, suited to the various school grades. Such a list could be determined very easily in any school system by simple investigation. There are, I believe, words that may best be learned in the second grade and words that should be learned in the fifth grade, and so on for the various grades. A list of this kind would include words which children are likely to miss, and words which may be easiest acquired in the various grade periods of school life. Such a list would constitute the best kind of spelling book, and, one moreover, which ought to be made by every system of schools. In the absence of such a list I stand for a spelling book and regular work in it, using this book, of course, in such a way as to connect the spelling lessons closely with the demands of the other work in language.

But after we have determined the collection of words, a question of great importance is the way the pupil is to be led to learn those words. The appeal to the eye in learning to spell, which supplanted an old method growing out of the best judgment of decades of repeated test by schoolmasters, is a method which the best pedagogy of to-day cannot sanction as a complete method of teaching spelling. If we are to obtain better results in spelling—that which I put as the first essential of the elements of English composition—we must adopt some of the wisdom which showed itself in the method of the old schoolmaster, and which we for the past generation and a half have thrown aside. If we require the pupil, in learning new

words, to study these first orally, pronouncing each word at the start, then each syllable and the syllables cumulatively, and ending with the pronunciation of the whole word, we are appealing to more avenues of mental approach, and are, therefore, making easier and firmer the network of associations out of which that word is to rise when the pupil summons it. In such a way, we are appealing to the eye, to the ear, and to that part of the motor mechanism which is connected with speech. We have here, then, the aid of three strong sensory avenues instead of one; as, for instance, when we make the appeal to the eye. After the pupil has prepared his lesson in this manner, we may then bring in the written practice upon this basis of preparation, and employ again the eye and combine with this the motor mechanism which lies in the hand and arm.

Some one will say that such oral preparation, namely, first the distinct pronunciation of the word, then spelling it by syllables, pronouncing distinctly each syllable, and pronouncing the syllables cumulatively, and then pronouncing the word as a whole at the end, is very slow and tedious work. And yet, there is economy in it; great economy, for not only are the associations more firmly and more quickly built up in this way, not only are we putting into the pupil's possession a power to analyze new words, into their syllabic components, and to center his attention upon the few elements which, in the new word, differ from any word he has previously learned—a matter of great economy in itself—but we are aiding him in reading and giving him the best possible practice in clear and distinct articulation and pronunciation, a matter now considerably neglected in our schools.

If we would give the vocal organs training, we must give them work to do in clear and exact articulation and

enunciation. There is no other exercise in the schoolroom comparable to this oral preparation of spelling lessons and the pronunciation of each syllable in the manner which I have indicated to secure these most desirable results. With such a method I believe that very little time would need to be given to spelling in the seventh and eighth years of the grammar grades—the time when it is generally found so necessary to spend as much time as possible in spelling drill. Thus, time may be saved in those grades to devote to the rules for spelling and to the etymology of words. Etymology should not, however, be taken up in the routine and uninteresting manner so common, and which calls for not much else than sheer, dull effort in verbal memory. It should be treated in connection with composition, and should serve to add variety to the pupil's language study. To lead into this, begin with words with some point of interest in their history, or those words whose derivation is easy to be traced, as: Fort-night, good-bye, furlong, topsy-turvy, volcano, mountebank, calculate, astonished, sincere, trivial, capricious, charlatan, etc., and then gradually work out to the more formal analysis of words. All this need not follow any alphabetically arranged list of roots, prefixes, and suffixes, but advantage should be taken of the recurring occasions when the pupil's attention may be directed to words that become the center of opportune interest. By leading the pupil to seek out for himself the connection of thought, and also to trace those connections in analysis for which a reason may be given, he acquires a power to help himself, and an interest is awakened, because more phases of mental activity are thereby aroused, and the study lifted out of dull, spiritless, mechanical memory.

Feeling for English.

The second essential to be secured is what I may term

"feeling for English." If I were required to make a choice between technical knowledge of English and what I may term "feeling for English," I should unhesitatingly choose the latter. This "feeling for English" is a subtle sense, transcending psychological analysis, and leading those who possess it to use English with an appreciation of the true spirit of the language. How, then, shall we develop in pupils this "feeling for English"? We may do this by giving them selections from the masters of English literature, and requiring that these selections be learned by heart, so that pupils may be able to repeat them, and to transcribe them : In every grade from the first school year thru the eighth school year, certain standard poems, selected with reference to the emotional status and intellectual appreciation of the pupil, should be memorized. At the very least, half a dozen poems for each year. Children derive pleasure from learning and repeating the best literature, as it meets a natural want in satisfying their sense of rhythmic expression. They may not recall all this literature in later years, but it leaves behind it that subtle æsthetic sense of "feeling for English."

The selections of the pieces which are to be memorized involves a very large and a very important question, namely, their ethical import ; but that is a question aside from the purpose of this article. There should be, then, for each grade, a certain number of carefully selected poems which each pupil should memorize, and with such a degree of perfection that he could rise and repeat the poem or take pen and paper and transcribe it correctly as to spelling, punctuation, capitals, and form.

In the sixth, seventh and eighth school years pupils should be given an opportunity to choose from a small collection the poems they would prefer to memorize. For

instance, if six poems were required of each pupil in any of these years, twelve poems should be given him to read and select his quota from in the sixth school year, eighteen poems in the seventh year, and twenty-four in the eighth school year. The object of this plan is to provide for the child's individuality of choice as influenced by his individuality of experience, and by his individuality of emotional tone.

But poems in themselves are not sufficient to develop this "feeling for English." Many of our courses of study furnish lists of poems that are to be memorized in the several grades, but I do not recall a course of study where excerpts of fine prose are required to be memorized. In the days of a generation ago this "feeling for English" was developed by those splendid selections of oratory which boys were required to memorize and speak at the rhetorical exercises then periodically held. We must not forget, in the multitude of newer things pressing upon our attention, all the good in the past. Hence, there should be provided in each grade a number of prose selections suited to the understanding and capacity of the pupils, each a unit in itself. The pupils should memorize these excepts so as to be able to repeat them orally, or to transcribe them, as has been recommended with reference to the poems.

Principles and Usages of Composition.

The third essential is this: The formularization of the principles and usages of English composition shall come to the pupil by easy inference after abundant exercises in the use of English, and not be forced upon him by definitions, illustrated by a few formal examples.

What is needed is ability to use English well, and not principally an acquaintance with its formal aspects.

The regarding of the formularies of composition as the

principal thing, and the inability to see the larger thing, the real thing, to which the formularistic statements must ever be secondary is where the cause of our failure in teaching English lies.

Most text-books, official syllabi, and examinations emphasize the formal aspects of composition, instead of showing how they may be subordinated. The teacher is thus misled, and her attention directed to these things as the end of her teaching. And it is not at all surprising that she comes at length to rest in the opinion that the ablity of her pupils to set forth these things in examination is the test and proof of her success in teaching. My objection, the reader will recognize, is not a new one. These formularistic statements and the examples used to illustrate them become ends and are pursued as ends, and thus the teaching of composition becomes dry and barren of results.

The fundamental requisite, then, from first to last, in the teaching of English composition in the elementary school is abundant and continued expression of the pupil's thought and feeling growing out of some activity, some experience, some observation, some intercourse, some imaginative construction, on the part of the pupil.

What is to be insisted on, then, is some positive underlying content in the pupil's mind which he is led to express either in oral or in written language, and out of this expression all the formal aspects of composition are to issue. The formularies are not to be omitted. They do not, however, lead the way; they are not the important ends, but are subordinated to the real thing, the essential thing, that is, something expressed.

Upon this expresions, as a basis, we may teach the more obvious grammatical and rhetorical matters incidentally In the lower grades many phases of capitalization and

punctuation, the formation of plurals, possessive cases, the forms of comparison, correct forms of verbs, etc., etc., may be taught, the teacher shaping the composition exercises so that sufficient opportunities shall arise to reveal to the pupil the necessity for such knowledge, and also to give him sufficient practice in using it correctly. Dictation exercises may be employed as one means of giving practice in correct forms, but each piece, so dictated, should be some composition exercise which the class as a whole has criticised, corrected, and amended. Each pupil has, then, some special interest in it and in its correct reproduction.

Letter writing, to be taken up toward the end of the third school year, will also afford another means toward the accomplishment of the ends just mentioned. Here, however, care must be exercised, that there shall be content in the pupil's mind before he is required to compose a letter. Business letters first, which are orders, then the replies to these; next may follow letters of inquiry, of direction, of application, of information, etc., thus gradually enlarging the scope to letters of friendship, invitation, acknowledgment, etc.

I have insisted that in all composition work there shall be content in the pupil's mind when he is asked to compose; in other words that bricks shall not be required without straw.

Fortunately, to-day, nature study and science work furnish something tangible and near at hand for the pupil to express; and therefore as much composition writing as possible should grow out of nature study and science work. History study may also be used to this end.

While, however, the pupil easily finds something to say when required to write out his observations and knowledge gained from nature study and science work, we

must not lose sight of the fact that even with a great amount of such writing he would remain deficient in skill and a knowledge of certain important matters of English.

By writing out descriptions of his observations in nature study and of his experiments in science, he learns to arrange his thoughts; to analyze out more fully his vague general ideas; he enlarges his vocabulary, and he acquires facility in setting forth his thought.

But to lead the pupil thru this kind of composition to an appreciation of sequence and transition of thought as affected thru sentence construction, and to lead him thru this kind of writing to an appreciation of literary form and unity, would prove a most difficult undertaking; and to seek to accomplish this upon nature study and science composition would be to disregard a law of mental economy. Mental economy points out a different plan.

The appreciation of literary form and unity, and a knowledge of the various ways that language may be employed to secure sequence, transition, and connection of thought, is best attained by reading to pupils well chosen literary selections within their appreciation and understanding, and then calling for the reproduction of these, sometimes orally, but principally in writing, especially in the higher grades. Such reproduction exercises should be given in the third school year and be continued in each succeeding year. There is, however, one danger to be guarded against in this, and that is a haphazard and unskilled choice of selections. Here pedagogical insight is most requisite. That so little use has been made of the reproduction is due to the difficulty of finding proper selections. Permit me to remark, however, that these may be found, and they may be found in number and variety sufficient.

The use of the written reproduction will afford excel-

lent opportunity for the careful treatment of the paragraph; not with reference to a definitive, formal treatment of what the paragraph is, and the rules for the formation of paragraphs, but a knowledge of how to shape and constitute a paragraph in writing.

Technical Grammar.

The next essential is a knowledge of the grammatical analysis of sentences—this leading to a knowledge of the parts of speech and the grammatical rules for their collocation. Good English may be acquired without a knowledge of technical grammar, but there is no plan yet at hand to guide teachers in securing such a result; and were there one a longer time would be needed to give the pupil a reliable knowledge of correct forms of English than is required when grammatical analysis and grammatical collocation of the part of speech are taught. One who has a knowledge of the grammatical structure of language possesses many advantages over one who has not this knowledge, tho the latter may use English with a fair degree of correctness. I need not enter here into a discussion of the educational value of the study of grammar. Its educational value alone would entitle it to a place in the elementary school curriculum, even if it did not equip the pupil with knowledge directly available in the use of English.

The study of grammatical analysis may well be begun in the sixth school year and carried on thru the seventh and eighth years. In this grammatical analysis, it is far better not to put into the pupil's hands an elementary grammar, with sentences selected from all the four wind- of literature and the remainder made to order—a collection of detached sentences which the pupil cannot relate to any piece of literature. Every sentence set before the pupil should be the expression of some thought he

has before met in some literary production studied by him. Each sentence, then, relates to some whole which has stirred the pupil's feelings and given him new ideas and new experiences, and he recognizes, therefore, what thought in that whole and what shading in that thought the sentence set before him serves to express. Every sentence he deals with tends, therefore, to draw after it some fraction of the tide of feeling aroused by the study of the literary production. The detached sentence carries no such substrate with it. Herein is one way to interest; for one phase of interest is the pleasureable tone of the mind in the exercise of its activity.

The first work in analysis might be based upon one of the selections for literary study read in sixth-year classes. The sentences could be taken from this and some sentences might, if necessity required, be slightly adapted. It is not necessary to begin with such absurdly simple and unattractive sentences as, Bells ring, Dogs bark. The pupil can easily deal with sentences of some length, and can understand the office of a group of words amounting even to a clause, when used as a modifier, as easily as beginning with modifiers of one word. In other words, he may be led as the principle of economy would suggest, to deal with sentences of usual length, as to subject and predicate, to deal almost at once with the three forms in which the modifier occurs, as word, phrase, or clause, and in the same manner with the direct object; and so gradually extending the analysis. Of course the order is not the order of the text-books, but it is a pedagogical order.

The method to be employed in unfolding this grammatical knowledge is that of the skilful questioning of the living teacher. It is to be principally analytic, rather than descriptive.

Variety of Expressions and Incorrect English.

Now, while the knowledge of grammatical structure is growing, not upon detached sentences, but upon sentences taken from some literary whole that the pupils have studied, the rhetorical positions of the elements of a sentence may be treated. These two t ings, then, grammatical structure and rhetorical positions, may be closely interrelated and the one made to aid the other. Side by side with grammatical analysis may be taken up variety of expression ; as, for instance, the transforming of an infinitive to a participle, a participle to a clause, replacing the active form by the passive, an imperative mood by the conditional, a clause by an infinitive, and so on. Variety of sentence form may also be interrelated with the development of a knowledge of grammatical structure. All this is to find continued application in the composition exercises which go forward at the same time, making it all a living reality to the pupil.

As soon as the pupil's knowledge of the parts of speech and of their modifications and their relations will admit of it, I should bring him face to face with specimens of incorrect English to set right, giving the best reasons therefore that may be adduced. I have no sympathy with those pseudo psychologists, who hold that a pupil should not see an incorrect form. Of course it must not be thought that I would ~~not~~ give the pupil exaggerated specimens to puzzle him ; but specimens of incorrect English he should deal with in the fashion described.

Literature Study.

The literature study in the seventh and eighth school years upon such works as "Snowbound," "Evangeline," "The Legend of Sleepy Hollow," "Rip Van Winkle," and Webster's, "Bunker Hill Oration," etc., may be closely

interrelated with the composition writing, affording excellent opportunity for a simple study of diction.

I have insisted in this article upon the actual use of English in writing, and a great deal of it, instead of study upon how English should be used, or how it may be used. Let me, in closing, add one qualification, and that is: At no point shall the teaching be such as to develop a fatal facility to use words at the expense of content of mind and definiteness of thought.

The Value of the Motor Activities in Education.

HE physical activity of children is a fact attested by common observation. The value of physical activity in the education of children must have been recognized by Comenius, as this recognition seems to be implied in his maxim, "Learn to do by doing," for it is only upon the knowledge gained thru recent investigations and researches that we are able to comprehend the import of the Comenian maxim. "Learn to do by doing," has been controverted from the time of its enunciation by Comenius down almost to the present day. It has been discussed pro and con, and little new light came out of the discussion. The disagreement grew out of the fact, that there was not scientific knowledge enough to interpret the maxim, and so it became the basis of a long controversy. Many educators all the while believed in the maxim; others repudiated it. But to-day we have sufficient knowledge to interpret and understand this maxim, and to remove it from the grounds where controversy has so long found it necessary to detain it. Its import, I trust, will become, in part, apparent to the reader from what I shall try to state concerning the demands of the motor activities in teaching. I shall be able to put before the reader more clearly these de-

mands, and how the motor activities aid in mental development, if I ask him to recall the mental impressions he has received when his observation has centered upon a child in the few weeks following its birth.

Impulsive Movements.

All persons have noticed the physical movements of a very young child. These movements are principally of two kinds, and they are to be distinguished from each other by the way in which they are initiated. The first class includes those movements which arise from some cause solely within the organism. The contractive movements made with the arms, the kicking movements made with the legs, the twistings and contortions of the body are for the most part movements of this kind, and are initiated by the discharge of nervous force from the lower centers of the brain. These movements are not directed by the child, but take place because the cells in the centers from which the impulses start become filled with cell-material gathered, of course, by reason of the nutritive and assimilative processes. When these cells are filled they undergo some change, because they have reached the point of fullness. It is by virtue of this change that impulses to muscular action are sent out along the nerves connected with the muscular system. In all this, we have the building up of the cell, and then its breaking down, or, to speak in other words, the using up of the cell-material according to some rhythmic and mysterious law of nature. Every discharge from these impulse centers sets into activity some set of muscles, and as soon as the muscles act, a stimulus is returned to the brain. In this manner a large part of the nervous mechanism of the child, which at this period is relatively simple in its structure, as compared with the nervous mechanism of the

fully-developed adult, is brought into action, or made to function in a normal manner.

Reflex Movements.

The second class of movements constitute those which arise from some cause primarily outside the organism; that is, from external stimulus. For instance, when a bright light is brought into the room where a young infant is lying, his head is turned toward the light because of the stimulus falling upon the nerves of the retina. There are, moreover, movements resulting from sound, as a stimulus, from taste, from touch, and from smell as a stimulus. These movements are due to the effect of stimulus upon the organs of sense.

Now such is the nature of the nervous mechanism that its extension and complexity of growth are aided by the very means which nature provides in muscular movements. The movements not only include the two kinds mentioned, but also other kinds, as, for instance, the instinctive movements. By virtue of all these movements the cells undergo modifications of development, and take on a deeper complexity of structure; and the development of the cells in complexity is accompanied by the shooting out of more nerve filaments or connections, or as some neurologists hold, the opening up of connecting fibers, which, are there at birth but not developed.

In the fully-matured child at birth the centers of the impulses, which are in the lower part of the brain, and their main connections, have completed their development; but in the cerebrum only a comparatively few connecting nerves are developed. There is also connection of the muscles, and a few sense organs with the central seat of consciousness. This central seat of consciousness is the surface layer of the brain, or cortex. In the surface layer of the brain are located the centers

of sight, of hearing, of touch, of taste, and of smell, and the activity of each of the centers is quite apart, Flechsig holds, from the activity in any other center. In other words these centers of sense are each of them for the time being so many separate seats of consciousness. As the child grows, and the nervous mechanism develops, these centers begin to push out nerve filaments toward each other, or to develop the fibers and filaments already there, and also to connect themselves with the lower regions of the brain, and with the spinal marrow. In the fully-developed brain, all the centers of sense are connected, and eventuate in a unitary action of all of them. These centers of sense are connected with the lower centers, and later certain higher centers become developed, whose office seems to be to control the lower centers. The control over the lower centers comes very slowly and the gradual acquirement of control over these is one of the immediate ends to be attained in education.

Flechsig's Theory.

Flechsig has called those parts of the brain which lie between the centers of sense and the impulses, and into which parts of the brain these centers push out nerve filaments, the association centers. Association regions, however, would seem to be a better term, and less confusing. Of course, we must not think that all association comes about solely in these association regions. The cells in the centers, as well as their ramifying connections thru these regions, are involved in association on its physical side.

I have now accounted for the physical activity which the very processes of nature compel in the early stages of the child's development. But as the child develops, and his conscious life enlarges, this tendency toward

physical activity still remains, guided somewhat by the child's consciousness and will, prompted by motives which rise and control him. These motives are capricious when regarded from the point of view of the mature mind. But however this physical activity may spring out of the capricious motives of the child, and may result in associations, it is due, in fact, to an underlying necessity of the child's nature. Unless there was physical activity, sensations and impressions could not be conveyed to the brain, and the progressive modification of the cells which compose the centers, and the shooting out of the filamentary nerve connections or the development of the nascent connections would not go forward. Physical activity, then, you will see, is necessary for the development, for the health, and for the unity of the nervous mechanism.

Proper development of the nervous system thru physical activity may be secured, some one will say, by a judicious provision of intervals of play for the child and youth. It may be granted that the proper amount of play would secure nervous unity to the individual. Modern researches, however, have shown us that the physical activity of the child, or, to speak more comprehensively, the motor activities of the child, may be so employed as to aid largely in mental development, thereby making that mental development not only a fuller one, but rendering its attainment easier for the child.

Attention.

The employment of the motor activities enables the child to give attention the easier; it aids largely in establishing associations; it furnishes all states of consciousness with a richer content.

The reason why the child's attention can be held for a surprisingly long time, provided he is so employed that

the motor energy may be expended in movement, seems to be found in the conditions already set forth; namely, that there are several centers of cells not closely connected with one another, but with the main branches of the nervous mechanism. There is a constant discharge of motor energy into these main channels of the motor system, in order to produce movement so that the nervous mechanism may be developed thereby. If, then, we can so employ motor activities as to make them a contributing part, or an accompaniment in the child's lessons, we are enabled thereby to hold the child's attention; but, on the other hand, if we do not employ the motor activities as an accompaniment, or contributing part in teaching the child, this energy which must be expended in movement, withdraws his attention from what we have in hand for him.

The impulses to motor activity seem to be the dominating factor in the capricious attention of the child; consequently, if we would hold the child's attention to any task, we must provide some motor accompaniment. In so doing, we use up the motor energy, which, by its very consumption, promotes the growth and development of the nervous mechanism. Moreover, by this consumption of motor energy in accordance with the normal functioning of the nervous system, we not only free the child from its otherwise disturbing influence, but give him at the same time a feeling of pleasure.

Not only is the child enabled the easier to give his attention to any matter in hand by the employment of motor activities with the more purely intellectual efforts required of him, not only is this way the shortest way to develop to their fullest perfection the control centers, and to aid in the development and strengthening of the

powers of will, but association and memory are largely aided by such motor means.

Association.

Association is made stronger, we well know, by increasing sense experiences and related mental experiences. If we wish, then, to strengthen the associations and memory, we must give the child as many sense experiences about any object as possible, and as many experiences in which he perceives some thought-relation, as we can give him. Now, the motor gives more sense experiences, and it enables the mind to perceive more relations, because the hands and the eyes are working together, and there is a progressive, developing concrete, continually forming as the outcome of the conjoint use of hands and eyes. It will be evident that the presentative and representative images are thereby enormously increased as to number. The representative images are also clearer. It follows, then, that the judgments formed thru discrimination and comparison are not only innumerably greater in totality, but they are also more accurate. Consequently, the motor makes clearer thinkers, because the pupil constructs more definite pictures or projections. And because of this reciprocal effect of one power of mind upon another, all his thinking is more definite and exact.

Mental Development Aided by Motor Means.

No one will question the proposition that mental development is dependent upon the development of the central nervous system, or the brain and its attached branches. Altho the cells which constitute this system may not be increased in number after the birth of the fully-matured infant, the education of the child is always a matter of the development of more or less of those

cells, and also of the establishment of more numerous connections between the centers. If, thru any system of school methods and prescription of studies, a part of the potential cells of the brain remain undeveloped, we have a brain of less power, a brain of less balance, a brain less able to stand the stress which is sure to come upon it. Besides, many difficulties will be experienced when the higher development of the mind is sought. The greater the number of potential cells that are appealed to, and the more numerous the connections we attempt to establish between centers, the easier will it be for that brain to acquire the various forms of thought-activity which have resulted from the long intellectual development of the race. By the employment of motor activity in teaching the child in our schools, not only is a greater number of cells called into action, thus increasing largely the pathways of interconnection and filling in the association regions, but the reaction in many of the centers is rendered more complex because additional elements enter thereby into the reaction. Clearness of conception is dependent upon the variety and strength of the images fused in the centers during the reaction, whose consequence is the psychic product.

What special application now is to be made of this knowledge in regard to the motor activities, and how are the demands which these motor activities make, to be met in the education of the child? Seek in every subject of study, especially in the lower grades, to provide motor activity, at least as an accompaniment of study and of recitation. If possible, however, invent means which shall use up the motor tendencies, and at the same time make them a contributing part in the more purely thought work required of the child. In short let some *doing* accompany all the child's efforts to *learn.*

.GV 14

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